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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,362	09/25/2003	Vincent J. Zimmer	42.P17240	7085

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EXAMINER

WANG, ALBERT C

ART UNIT PAPER NUMBER

2115

DATE MAILED: 03/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/671,362	Applicant(s) ZIMMER ET AL.	
	Examiner Albert Wang	Art Unit 2115	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

**DETAILED ACTION**

1. Original claims 1-30 are pending.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 27-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Contrary to the limitation that a plurality of firmware drivers written in a type-safe intermediate language are stored in a flash device, the specification teaches that firmware drivers are compiled into type-safe IL files (par. 34), and that intermediate language codes are compiled into native managed code before being written into flash memory (fig. 5). Contrary to the limitation that native instructions comprising a virtual processor is stored in the flash device along with the firmware drivers, the specification teaches only that the IL interpreter or JIT compiler is stored in platform firmware (pars. 50 & 55).

Claims 28-30 depend on claim 27.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adelstein et al., “Malicious Code Detection for Open Firmware”, 18<sup>th</sup> Annual Computer Security Applications Conference, December 9-13, 2002 (“Adelstein”).

As per claim 1, Adelstein teaches a method, comprising:

processing a platform-independent firmware component during a pre-boot phase of a computer platform (fig. 1; secs. 1 & 2, boot-time drivers and other modules written in fcode, which is machine-independent); and

processing the platform-independent firmware component during an operating system-(OS)-runtime phase (peripheral devices are utilized via device drivers during runtime).

However, while Adelstein does not expressly teach the platform-independent firmware component to be type-safe, Adelstein teaches an embodiment for guarding against malicious firmware that is comparable to that provided by type-safe language (sec. 3). Adelstein teaches further that using a type-safe language is a known security mechanism for guarding against malicious firmware (secs. 5.2 & 5.2.1). Therefore at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a type-safe firmware as an alternative to Adelstein’s embodiment.

As per claims 2 and 7, Adelstein teaches a type-safe intermediate language (IL) that is processed using an interpreter for the IL (sec. 5.2.1).

As per claim 3, Adelstein teaches a type-safe intermediate language (IL) and is processed using a Just-in-Time (JIT) compiler for the IL (sec. 5.2.1).

As per claim 4, Adelstein teaches processing the platform-independent firmware module with an interpreter generates an executable image, and storing the executable image to be accessible to platform firmware during a subsequent pre-boot phase for the computer platform (fig. 1).

As per claims 5 and 6, storing an executable image on a platform firmware storage device or in a portion of a disk drive that is accessible to the platform firmware is well known in the art.

As per claim 8, the Common Language Infrastructure (CLI) standard is a well known standard.

As per claims 9 and 10, Adelstein teaches performing a type-safety verification on the platform-independent firmware component (secs. 3 & 5.2.2).

As per claim 11, Adelstein teaches a method comprising:  
encoding source code corresponding to a firmware driver into a intermediate language (IL)-encoded firmware driver (sec. 4.1, where fcode is intermediate language); and  
processing the IL-encoded firmware driver during a pre-boot phase of a computer platform (fig. 1; secs. 1 & 2, boot-time drivers and other modules written in fcode).

However, while Adelstein does not expressly teach the IL-encoded firmware component to be type-safe, Adelstein teaches an embodiment for guarding against malicious firmware that is comparable to that provided by type-safe language (sec. 3). Adelstein teaches further that using a type-safe language is a known security mechanism for guarding against malicious firmware (secs. 5.2 & 5.2.1). Therefore at the time of the invention, it would have been obvious to one of

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ordinary skill in the art to use a type-safe IL-encoded firmware as an alternative to Adelstein's embodiment.

As per claim 12, a PE/COFF (Portable Executable/Common Object File Format) image is inherent in the CLI standard.

As per claim 13, the Common Language Infrastructure (CLI) standard is a well known standard.

As per claim 14, Adelstein teaches verifying the IL-encoded firmware driver for type-safety prior to its processing (secs. 3 & 5.2.2).

As per claim 15, Adelstein teaches processing IL-encoded firmware using an IL interpreter (sec. 5.2.1).

As per claim 16, Adelstein teaches processing IL-encoded firmware using a Just-in-Time (JIT) compiler (sec. 5.2.1).

As per claim 17, the Extensible Firmware Interface (EFI) standard is a well known standard.

As per claims 18 and 19, peripheral devices are utilized via device drivers during OS-runtime.

As per claim 20, Adelstein teaches a machine-readable media to provide instructions, which when executed perform operations comprising:

loading a processor-neutral firmware module into a pre-boot environment (fig. 1; secs. 1 & 2, boot-time drivers and other modules written in fcode, which is machine-independent); and

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processing the processor-neutral firmware module via a virtual processor in the pre-boot environment (fig. 1; secs. 1 & 2, processing with fcode interpreter).

However, while Adelstein does not expressly teach the processor-neutral firmware module to be type-safe, Adelstein teaches an embodiment for guarding against malicious firmware that is comparable to that provided by type-safe language (sec. 3). Adelstein teaches further that using a type-safe language is a known security mechanism for guarding against malicious firmware (secs. 5.2 & 5.2.1). Therefore at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a type-safe firmware as an alternative to Adelstein's embodiment.

As per claim 21, Adelstein teaches the instructions including native instructions corresponding to an interpreter to operate as the virtual processor (secs. 2 & 5.2.1).

As per claim 22, Adelstein teaches a Just-in-Time (JIT) compiler to operate as the virtual processor (sec. 5.2.1).

As per claim 23, Adelstein teaches instructions written in intermediate language (IL) code (sec. 5,2,1).

As per claim 24, the Common Language Infrastructure (CLI) standard is a well known standard.

As per claim 25, Adelstein teaches a firmware storage device, and the instructions comprise firmware instructions (fig. 1; secs. 1 & 2).

As per claim 26, Adelstein teaches publishing an interface via which an operating system (OS) may access the processor-neutral firmware module during OS runtime operations (sec. 4.2).

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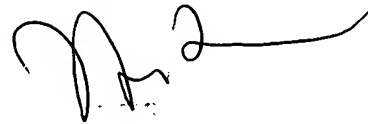
*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert Wang whose telephone number is 571-272-3669. The examiner can normally be reached on M-F (9:30 - 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas C. Lee can be reached on 571-272-3667. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AW

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